

Amendments to the Claims

Claim 1 (Currently Amended): A method of forming sidewall dielectric on an ONO-type memory cell stack where at least one sidewall of the ONO-type memory cell stack includes at least three exposed material layers with at least two of the exposed material layers being respectively composed of an oxide and an oxidizable material disposed adjacent to the oxide, the method comprising:

(a) subjecting the at least one sidewall to a dry ISSG process (In-Situ Steam Generation) where the dry ISSG process comprises:

(a.1) flowing molecular oxygen (O_2) towards the stack; and

(a.2) flowing molecular hydrogen (H_2) towards the stack, where the volumetric flow ratio of the H_2 to the O_2 is less than about 0.2;

wherein said oxidizable material has a sacrificial nitride layer disposed thereon and the method further comprises:

(b) stripping off the sacrificial nitride layer after performance of said step (a) of subjecting the at least one sidewall to the dry ISSG process.

Claim 2 (Original): The sidewall dielectric forming method of Claim 1 wherein:

(a.2a) said volumetric flow ratio of H_2/O_2 is less than about 0.1.

Claim 3 (Original): The sidewall dielectric forming method of Claim 1 wherein:

(a.2a) said volumetric flow ratio of H_2/O_2 is equal to, or less than, about 0.02.

Claim 4 (*Previously Presented*): The sidewall dielectric forming method of Claim 3 and further comprising:

- (b) rapidly heating the flowing oxygen (O₂) and flowing hydrogen (H₂) to a temperature in the range of about 850°C to about 1050°C as they flow towards said at least one sidewall.

Claim 5 (*Previously Presented*): The sidewall dielectric forming method of Claim 3 and further comprising:

- (b) continuing the subjecting of the at least one sidewall to the dry ISSG process for a duration selected from the range of about 20 seconds to about 300 seconds.

Claim 6 (*Previously Presented*): The sidewall dielectric forming method of Claim 1 and further comprising:

- (a.1a) varying the O₂ flow rate over the range of about 3slm to about 10slm (ten standard liters per minute).

Claim 7 (*Previously Presented*): The sidewall dielectric forming method of Claim 1 and further comprising:

- (a.2a) varying the H₂ flow rate over the range of about 0.1slm to about 1slm.

Claim 8 (*Previously Presented*): The sidewall dielectric forming method of Claim 3 and further comprising:

- (b) establishing a chamber pressure for the flowing oxygen (O₂) and flowing hydrogen (H₂) in the range of about 5 Torr to about 50 Torr.

Claim 9 (*Previously Presented*): The sidewall dielectric forming method of Claim 1 and further wherein:

(b) said at least three exposed material layers of the ONO-type memory cell stack includes:

- (b.1) a first silicon nitride layer;
- (b.2) a first silicon layer; and
- (b.3) a first silicon oxide layer adjacent to the first silicon layer.

Claim 10 (*Previously Presented*): The sidewall dielectric forming method of Claim 9 and further wherein said at least three exposed material layers of the ONO-type memory cell stack includes:

- (b.4) a second silicon layer;
- (b.5) a second silicon oxide layer;
- (b.6) a tunnel dielectric layer;
- (b.7) wherein the first silicon nitride layer is interposed between the first and second silicon oxide layers; and
- (b.8) wherein the combination of the first and second silicon oxide layers and the first silicon nitride layer is interposed between the first and second silicon layers.

Claim 11 (*Canceled*)

Claim 12 (Previously Presented): The sidewall dielectric forming method of Claim 3 and further wherein:

a height variation ratio, $R_H = H_{\text{outer}}/H_{\text{inner}}$, determined for the ONO-type memory cell stack after formation of the sidewall dielectric by the dry ISSG process, is about 1.20 or less, where H_{inner} represents a stack height at a lateral position in the stack that is spaced away from the stack edges and where H_{outer} represents a stack height at a lateral position near or at one of the stack edges.

Claim 13 (Previously Presented): The sidewall dielectric forming method of Claim 10 and further wherein lateral sidewall breakdown voltages are substantially uniform along the height of the ONO-type memory cell stack after formation of the sidewall dielectric by the dry ISSG process.

Claim 14 (Previously Presented): The sidewall dielectric forming method of Claim 10 and further wherein a larger erase speed is obtained in a memory cell having said ONO-type memory cell stack after formation of the sidewall dielectric by the dry ISSG process, where the larger erase speed is larger than a corresponding erase speed obtained in a corresponding memory cell having an ONO-type memory cell stack with sidewall dielectric formed by a dichlorosilane-based HTO process.

Claim 15 (Previously Presented): The sidewall dielectric forming method of Claim 1 and further comprising:

(b) after said dry ISSG process, forming further and supplemental sidewall dielectric by a non-ISSG oxidation process.

Claims 16-20: (Canceled).

Claim 21 (Previously Presented): The sidewall dielectric forming method of Claim 1 and further comprising:

(a.1a) setting the O₂ flow rate over the range of about 3slm to about 10slm (ten standard liters per minute).

Claim 22 (Previously Presented): The sidewall dielectric forming method of Claim 21 and further comprising:

(a.2a) setting the H₂ flow rate over the range of about 0.1slm to about 1slm.

Claim 23 (Previously Presented): A method of forming sidewall dielectric on an ONO-type memory cell stack where at least one sidewall of the ONO-type memory cell stack includes at least three exposed material layers with at least two of the exposed material layers being respectively composed of an oxide and an oxidizable material disposed adjacent to the oxide, the method comprising:

(a) subjecting the at least three exposed material layers of the sidewall of the ONO-type memory cell stack to a dry ISSG process (In-Situ Steam Generation) where the dry ISSG process generates short lived oxygen radicals whose reactivity extinguishes before the short lived oxygen radicals are able to permeate laterally as deep into said exposed oxide material of the ONO-type memory cell stack and oxidize materials therein as would the reactive oxygen of a dichlorosilane-based High Temperature Oxidation (HTO) process applied to an essentially same ONO-type memory cell stack.

Claim 24 (Previously Presented): The sidewall dielectric forming method of Claim 1 wherein method is part of mass production process that mass produces integrated circuits to have consistent, predefined performance characteristics.

Claim 25 (Currently Amended): The sidewall dielectric forming method of Claim ~~[[1]]~~ **28** wherein said oxidizable material has a sacrificial nitride layer disposed thereon and the method further comprises:

(b) stripping off the sacrificial nitride layer after performance of said step (a) of subjecting the at least one sidewall to the dry ISSG process.

Claim 26 (Previously Presented): The sidewall dielectric forming method of Claim 1 wherein said step (a.2) of flowing the molecular hydrogen (H_2) towards the stack is constrained to below a volumetric flow ratio of H_2 to O_2 at which formation of a hydrogen flame due to the presence of H_2 is at least unstable if not that the flame is extinguished or unignited due to insufficient presence of H_2 .

Claim 27 (Previously Presented): The sidewall dielectric forming method of Claim 1 wherein said step (a.2) of flowing the molecular hydrogen (H_2) towards the stack is constrained to below a volumetric flow ratio of H_2 to O_2 at which stable ignition of a hydrogen flame due to the presence of H_2 is assured on a mass production basis.

Claim 28 (Currently Amended): ~~The sidewall dielectric forming method of Claim 15~~

A method of forming sidewall dielectric on an ONO-type memory cell stack where at least one sidewall of the ONO-type memory cell stack includes at least three exposed material layers with at least two of the exposed material layers being respectively composed of an oxide and an oxidizable material disposed adjacent to the oxide, the method comprising:

(a) subjecting the at least one sidewall to a dry ISSG process (In-Situ Steam Generation) where the dry ISSG process comprises:

(a.1) flowing molecular oxygen (O_2) towards the stack; and

(a.2) flowing molecular hydrogen (H_2) towards the stack, where the

volumetric flow ratio of the H_2 to the O_2 is less than about 0.2;

(b) after said dry ISSG process, forming further and supplemental sidewall

dielectric by a non-ISSG oxidation process;

wherein said non-ISSG oxidation process includes use of dichlorosilane.